claim:

1. In a power converter, comprising:

an input for accepting a DC voltage;

a power transformer including a primary and secondary winding;

a power switch for periodically connecting the input to the primary winding;

an output for accepting a load to be energized;

clamping means for limiting a voltage and extending the voltage's duration across the secondary winding at a substantially constant amplitude during substantially an entire extent of a clamping interval of a cyclic period of the power converter;

a rectifier circuit connecting the secondary winding to the output; and including:

a synchronous rectification device with a control terminal connected to be responsive to a signal across the secondary winding such that the synchronous rectification device conducts a load current during substantially the entire extent of the clamping interval; and

a rectifying device connected for enabling conduction of the load current during a second interval other than the clamping interval.

2. In a power converter, comprising

an input for accepting a DC voltage;

a power transformer including a primary and secondary winding;

a power switch for periodically connecting the input to the primary winding during a second interval of a cyclic period;

an output for accepting a load to be energized;

clamping means for limiting a voltage and extending the voltage's duration across the secondary winding at a substantially constant amplitude during substantially an entire extent of a clamping interval of a cyclic period of the power converter;

a rectifier circuit connecting the secondary winding to the output; and including:

a first synchronous rectification device with a control terminal connected to be responsive to a signal across the secondary winding such that the synchronous rectification device conducts a load current during substantially the entire extent of the clamping interval, and

a second synchronous rectification device with a control terminal connected to be responsive to a signal across the secondary winding such that the second synchronous rectification device conducts the load current during substantially an entire extent of the second interval other than the clamping interval.

3. In a power converter as claimed in claim 1 or 2, comprising:

the converter connected to operate as a forward type converter.

4. In a power converter as claimed in claim 1 or 2, comprising:

the converter connected to operate as a flyback type converter.

5. A switching mode power converter, comprising:

a power transformer including a magnetizing inductance requiring periodic recycling;

a first power stage for converting a DC input into a periodic pulsed voltage applied to a primary winding of the transformer, including:

a clamping circuit for limiting a voltage of the transformer during the periodic recycling at a substantially constant amplitude and extending the voltage duration to maintain a constant voltage for substantially an entire extent of periodic recycling;

output of a sec-

second power stage for rectifying an output
ondary winding of the transformer and applying it to a
load to be energized, including:

a synchronous rectifier including a first rectifying device with a control gate connected to be responsive to a signal across the secondary winding such that the synchronous rectification device conducts a load current during the periodic recycling when the clamping circuit is active, and

a second rectifying device connected for enabling conduction of the load current when the first rectifying device is nonconducting.

6. A switching mode power converter as claimed in claim **5**, further comprising:

the second rectifying device comprises a diode.

7. A switching mode power converter as claimed in claim **5**, further comprising:

the second rectifying device comprises a rectifying device with a control gate connected to be responsive to a signal of the secondary winding.

8. A switching mode power converter as claimed in claim **6** or **7**, further comprising:

the secondary winding tapped and separated into first and second winding segments, and the first rectifying device is connected to the first winding segment and the second rectifying device is connected to the second winding segment.

9. A switching mode power converter as claimed in claim **6** or **7**, further comprising:

the converter connected to operate as a forward type converter.

10. A switching mode power converter as claimed in claim **6** or **7**, further comprising:

the converter connected to operate as a flyback type converter.

Please add Claims 11-60:

11. A power converter, comprising:

a power transformer having a plurality of windings;

a clamping circuit, coupled to said power transformer, that limits a voltage across at least one of said plurality of windings during a clamping interval of said power converter; and

a synchronous rectification device coupled to said power transformer and having a control terminal responsive to a signal across at least one of said plurality of windings such that said synchronous rectification device is active for substantially all of said clamping interval.

12. The power converter as claimed in claim 11 wherein said clamping circuit is directly connected to said power transformer.

13. The power converter as claimed in claim 11 wherein said clamping circuit is coupled to a primary winding of said power transformer.

14. The power converter as claimed in claim 11 wherein said power transformer has a center-tapped secondary winding.

15. The power converter as claimed in claim 11 further comprising a power switch that connects a primary winding of said power transformer to an input of said power converter during a first cyclic interval of said power converter.

16. The power converter as claimed in claim 11 further comprising a further synchronous rectification device, coupled to said power transformer, that is active during a first cyclic interval of said power converter.

17. The power converter as claimed in claim 11 further comprising a rectification device, coupled to said power transformer, that is active during a first cyclic interval of said power converter.

18. The power converter as claimed in claim 11 wherein said clamping circuit comprises a switching device connected in series with a capacitor.

19. The power converter as claimed in claim 18 further comprising a control circuit that controls said switching device.

20. The power converter as claimed in claim 11 wherein said power converter operates in one of:

a forward mode,

a flyback mode, and

a forward/flyback mode.

21. A power converter, comprising:

a power transformer having a plurality of windings;

a synchronous rectification device coupled to at least one of said plurality of windings and having a control terminal; and

a clamping circuit, coupled to said power transformer, that limits a voltage applied to said control terminal such that said synchronous rectification device is active for substantially all of a clamping interval.

22. The power converter as claimed in claim 21 wherein said clamping circuit is directly connected to said power transformer.

23. The power converter as claimed in claim 21 wherein said clamping circuit is coupled to a primary winding of said power transformer.

24. The power converter as claimed in claim 21 wherein said power transformer has a center-tapped secondary winding.

25. The power converter as claimed in claim 21 further comprising a power switch that connects a primary winding of said power transformer to an input of said power converter during a first cyclic interval of said power converter.

26. The power converter as claimed in claim 21 further comprising a further synchronous rectification device, coupled to said power transformer, that is active during a first cyclic interval of said power converter.

27. The power converter as claimed in claim 21 further comprising a rectification device, coupled to said power transformer, that is active during a first cyclic interval of said power converter.

28. The power converter as claimed in claim 21 wherein said clamping circuit comprises a switching device connected in series with a capacitor.

29. The power converter as claimed in claim 28 further comprising a control circuit that controls said switching device.

30. The power converter as claimed in claim 21 wherein said power converter operates in one of:

a forward mode,

a flyback mode, and

a forward/flyback mode.

31. A power converter, comprising:

a power transformer having a plurality of windings;

a synchronous rectification device having a control terminal and coupled to at least one of said plurality of windings; and

a clamping circuit, coupled to said power transformer, that limits a voltage applied to said control terminal such that said synchronous rectification device conducts a load current for substantially all of a clamping interval.

32. The power converter as claimed in claim 31 wherein said clamping circuit is directly connected to said power transformer.

33. The power converter as claimed in claim 31 wherein said clamping circuit is coupled to a primary winding of said power transformer.

34. The power converter as claimed in claim 31 wherein said power transformer has a center-tapped secondary winding.

35. The power converter as claimed in claim 31 further comprising a power switch that connects a primary winding of said power transformer to an input of said power converter during a first cyclic interval of said power converter.

36. The power converter as claimed in claim 31 further comprising a further synchronous rectification device, coupled to said power transformer, that is active during a first cyclic interval of said power converter.

37. The power converter as claimed in claim 31 further comprising a rectification device, coupled to said power transformer, that is active during a first cyclic interval of said power converter.

38. The power converter as claimed in claim 31 wherein said clamping circuit comprises a switching device connected in series with a capacitor.

39. The power converter as claimed in claim 37 further comprising a control circuit that controls said switching device.

40. The power converter as claimed in claim 31 wherein said power converter operates in one of:

a forward mode,

a flyback mode, and

a forward/flyback mode.

41. A power converter, comprising:

a power transformer having a plurality of windings;

a synchronous rectification device having a control terminal responsive to a drive signal and coupled to at least one of said plurality of windings; and

a clamping circuit, coupled to said power transformer, that limits said drive signal applied to said control terminal such that said drive signal is continuous for substantially all of a clamping interval.

42. The power converter as claimed in claim 41 wherein said clamping circuit is directly connected to said power transformer.

43. The power converter as claimed in claim 41 wherein said clamping circuit is coupled to a primary winding of said power transformer.

44. The power converter as claimed in claim 41 wherein said power transformer has a center-tapped secondary winding.

45. The power converter as claimed in claim 41 further comprising a power switch that connects a primary winding of said power transformer to an input of said power converter during a first cyclic interval of said power converter.

46. The power converter as claimed in claim 41 further comprising a further synchronous rectification device, coupled to said power transformer, that is active during a first cyclic interval of said power converter.

47. The power converter as claimed in claim 41 further comprising a rectification device, coupled to said power transformer, that is active during a first cyclic interval of said power converter.

48. The power converter as claimed in claim 41 wherein said clamping circuit comprises a switching device connected in series with a capacitor.

49. The power converter as claimed in claim 48 further comprising a control circuit that controls said switching device.

50. The power converter as claimed in claim 41 wherein said power converter operates in one of:

a forward mode,

a flyback mode, and

a forward/flyback mode.

51. A power converter, comprising:
an input that accepts a DC voltage;
an output that provides current to a load;
a power transformer having at least one primary winding and at least one secondary winding;
a power switch that periodically connects said input to said at least one primary winding during a first cyclic interval of said power converter;
a clamping circuit that limits a voltage across said at least one secondary winding during a clamping interval of said power converter; and
a synchronous rectification device having a control terminal responsive to a signal across said at least one secondary winding such that said synchronous rectification device is active for substantially all of said clamping interval.

52. The power converter as claimed in claim 51 wherein said clamping circuit is directly connected to said power transformer.

53. The power converter as claimed in claim 51 wherein said clamping circuit is coupled to said at least one primary winding of said power transformer.

54. The power converter as claimed in claim 51 wherein said at least one secondary winding has a center-tap.

55. The power converter as claimed in claim 51 further comprising a voltage limiting device coupled to said synchronous rectification device.

56. The power converter as claimed in claim 51 further comprising a further synchronous rectification device, coupled to said power transformer, that is active during a first cyclic interval of said power converter.

57. The power converter as claimed in claim 51 further comprising a rectification device, coupled to said power transformer, that is active during a first cyclic interval of said power converter.

58. The power converter as claimed in claim 51 wherein said clamping circuit comprises a switching device connected in series with a capacitor.

59. The power converter as claimed in claim 58 further comprising a control circuit that controls said switching device.

60. The power converter as claimed in claim 51 wherein said power converter operates in one of:
a forward mode,
a flyback mode, and
a forward/flyback mode.